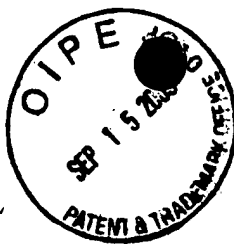


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C. J. Lee  
9/23/03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant: Y. ALMOG, et al.  
Serial Number: 09/529,289  
Filed: April 7, 2000  
For: COATING SYSTEM FOR SUBSTRATES  
Examiner: Ling X. Xu  
Art Unit: 1775

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Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

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**APPEAL BRIEF**

Sir:

Further to a Final Office Action dated February 11, 2003 and a Notice of Appeal filed on June 13, 2003, the following is applicants brief on appeal.

(1) **Real Party of Interest:** The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

(2) **Related Appeals and Interferences:** None

(3) **Status of claims:**

Claims 1-3, 7-12, 14-20, 22-30, 32, 37-42 and 45 are present in the application. Claims 1-3, 7-12, 14-20, 22-29, 32 and 42 stand rejected and form part of this appeal. Claims 30, 37-41 and 45 are withdrawn from consideration, but would be includable in a patent that issues from this application, if applicants prevail in this appeal. Applicants note that claim 29 is not rejected on the art.

Appeal Brief USSN 09/529,289

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**(4) Status of Amendments:**

An amendment after final, was filed on June 12, 2003 and was entered. The attached claims include all entered amendments.

**(5) Summary of the Invention:**

Coated substrates, for various uses, are well known. Furthermore, the use of two layers of coating, in which the upper layer and lower layer provide different functions, is well known.

The present invention defines a sheet of plastic suitable for printing a toner image thereon, that is coated with two layers, an underlayer chosen from the group consisting of amine terminated polyamide, a silane coupling agent and reaction products of amino propyl silane, and an overlayer. Various parameters of the coating layers are defined.

**(6) Issues:**

A- Whether claims 1-3, 7-12, 14-20, 22-29, 32 and 42 contain new matter and are properly rejected under 35 U.S.C. §112, first paragraph.

B- Whether claims 1-3, 7-12, 14-20, 22-29, 32 and 42 are unpatentable under 35 U.S.C. §112, first paragraph as containing subject matter which is not enabled.

C- Whether claims 1-3, 7-12, 14-20, 22-29, 32 and 42 are unpatentable under 35 U.S.C. §112, second paragraph as being unclear.

D- Whether claims 1, 3, 7-12, 19-20, 28, 32 and 42 are anticipated, under 35 U.S.C. §102(b), by Lever, et al., EP 0 458 481.

E- Whether claims 1-3, 14-18, 22-28 and 42 are unpatentable under 35 U.S.C. §103(a) over Lever et al.

**(7) Grouping of the Claims**

The claims are grouped as follows, according to the set of arguments relevant for each group of claims. These claims stand or fall together, based on the art cited.

Group 1	Claims 1 and 42	Arguments A, B, C
Group 2	Claims 2, 3, 7-18, 19, 20 and 23-28	Arguments A, B.
Group 3	Claim 29	Argument A

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Group 4	Claim 28	<i>Independent claims claim</i>	Arguments A, B, D.
Group 5	Claim 22		Arguments A, C.
Group 6	Claims 23 and 24		Arguments A, B, E.
Group 7	Claim 32		Argument F

The claims have been divided into seven groups, the claims of each of which stand *and* fall together. However, different groupings of claims may *stand* together as follows:

If argument A is accepted, claim 29 stands, since it only rejected under 35 U.S.C. §112 grounds.

If arguments A and B are accepted, claims 7-12, 19, 20 and 32 stand, since these claims are only rejected under 35 U.S.C. §102(b) and §112.

Further, if arguments A and B are accepted, claims 2, 3, 14-18, and 28 stand, since they are rejected only on the bases of the rejection under 35 U.S.C. §112, and arguments combining the rejection under 35 U.S.C. §102(b) (as stated above, in the words of the rejections of these claims) and additional obviousness arguments. If the rejections under §112 and §102 fall, these claims should be patentable.

If arguments A, B and C are accepted, all of the claims should be patentable.

If arguments A and E are accepted, claims 23 and 24 should be patentable.

If arguments A and D are accepted, claim 28 should be patentable.

If argument F is accepted, claim 32 should be patentable.

If argument A is not accepted, none of the claims are necessarily patentable.

Applicants note that the rejection of claims 1, 22 and 42 in section 8 of the final rejection is unclear, in that if "As stated above, Lever discloses a substrate suitable for printing a toner image thereon comprises a sheet of plastic, an underlayer coating and an overlayer coating as recited in claims 1 and 42," then the further arguments regarding claims 1, 28 and 42 appear to be unnecessary. Applicants have understood this rejection as supplying an alternative reason for rejection of claims 1, 28 and 42.

#### **(8) Arguments:**

##### Summary of the cited prior art.

Lever describes a polymeric sheet having a first coating layer of a lacquer and a second, overlayer, of a toner receptive material. The underlayers that are described (and considered relevant to the present invention by the Examiner) are described at page 3, lines 2-9. These

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include "polyvinyl acetal resins, copolymers of vinylidene chloride especially such copolymers with acrylonitrile cellulosic esters and copolymers of acrylic and methacrylic copolymers that are capable of external or internal cross-linking, such as those containing cross-linkable functional groups, eg hydroxyl, carboxyl, amide, oxirane, amine, nitrile, epoxy and trihydroxy silyl groups."

Lever indicates at page 3, line 22 that the lacquer layer should preferably comprise finely divided particulate material. This is useful in his application as a drafting film since this enhances the capture of writing on the film.

**Argument A - Rejection Under 35 U.S.C. §112 - Applicable to all the claims**

The Examiner has rejected all of the claims on appeal under 35 U.S.C. §112, first and second paragraphs based on the following allegations:

1. The subject matter of the terminology was not described in the specification in such a way to reasonably convey to one skilled in the art that the Applicants had possession of the invention;
2. The specification does not enable one skilled in the art to make and/or use the subject matter of the terminology; and
3. The terminology is indefinite.

Applicants respectfully traverse the above rejections.

Independent claims 1 and 42 are directed to a substrate comprising an underlayer coating comprising a polymer material selected from the group "consisting of ... amino propyl triethoxy silane, and reaction products of amino terminal triethoxy silane..." As one skilled in the art would appreciate, amino propyl triethoxy silane ("APTS") is a highly active and reactive compound, as is reflected, for example, in an article entitled, "Tailoring Surfaces With Silanes," from A Survey of Properties and Chemistry, edited by B. Ackley, Gelest, Inc., 1995, pps. 36-37. One skilled in the art would also appreciate that APTS would react with water or other components, or even water in a humid environment, to form reaction products.

More specifically, the outerlayer coating according to the invention may be water-based, as exemplified in the preparation of an outerlayer coating in the specification on page 7. One skilled in the art would appreciate that when the outerlayer coating is water-based, APTS will react with water from the outerlayer coating to form reaction products.

The Board's attention is directed to the Declaration of Yaacov Almog, previously submitted. In his Declaration Dr. Almog, an experienced polymer chemist, explains the unique,

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highly reactive properties of APTS and why an art-skilled person such as himself would expect APTS to cause reaction products to occur and would understand the conditions under which this would happen.

Applicants respectfully submit that the reaction product terminology discussed above is inherent in the specification as filed and that one skilled in the art would appreciate the scope of Applicants' invention and how to make and/or use the invention.

Therefore, the requirements of the first and second paragraphs of 35 U.S.C. §112 have been met, and the rejections should be overturned.

**Argument B - Rejection under 35 U.S.C. §102(b) - Applicable to claims 1, 3, 7-12, 19-20, 28, 29, 32 and 42**

The Examiner indicates in section 5 of the final rejection that these claims are anticipated by Lever, since "The polymer material having cross-linkable functional groups including amine, amide and trihydroxyl groups (page 3, lines 2-9) can be one of the reaction products of the amino propyl triethoxy silane." Applicants submit that this speculation on the part of the Examiner does not constitute a *prima facie* case of anticipation.

In particular, the backbone of the amino propyl triethoxy silane as claimed is not taught by Lever in combination with the trihydroxy silyl groups. Absent such a teaching, there can not be any anticipation, even of the reaction products as claimed.

Clearly Applicants' invention is not disclosed by Lever, and there is no *prima facie* basis for rejecting any of the claims herein under 35 U.S.C. §102(b).

**Argument C - Rejection of claims 1, 22 and 42 under 35 U.S.C. 102(b) 103(a)**

The Examiner indicates that it would be obvious to utilize the amino propyl triethoxy silane of claims in lacquer coating of Lever. Applicants disagree. In the portion of the Lever reference relied on by the Examiner, a number of backbones and functional groups are listed. While the linkable groups listed include triethoxy silyl groups, the backbone of the amino propyl triethoxy silane is not mentioned.

While there are some similarities between the Applicants' invention and the drafting film disclosed by Lever, there are also significant differences, especially with regard to Lever's lacquer layer and Applicants' underlayer coating. More specifically, the Examiner has characterized Lever as teaching a lacquer layer comprising (broadly) "a polymer material which has crosslinkable functional groups, such as amine and triethoxy silyl groups...." However, that characterization is misleading. More correctly, Lever teaches at the top of page three that

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the lacquer layer comprises suitable resins, including copolymers of acrylic and methacrylic acid and esters thereof that may contain crosslinkable functional groups such as amine or triethoxy silyl groups. While the materials used in Applicants' underlayer coating may contain one or more of the identified crosslinkable functional groups, the materials are not based on acrylic or methacrylic acid or esters thereof, as taught by Lever.

The Examiner indicates that the use of a portion of the claimed compounds with other backbones makes the presently claimed compounds obvious. However, Applicants submit that the materials that were claimed and described are the results of substantial experimentation. For the use described both the linkable functional groups of the claimed compounds found in the prior art and the portion of the claimed compounds that are found (in combination) only in the claims, contribute to the final positive properties of the coatings. Applicants submit that these coatings must meet a number of requirements, such as toner transfer and quality, as well as good adhesion. There is no expectation, as indicated by the Examiner, that a material with a different backbone would have similar properties. On the contrary, one would have understood that the backbone was more important and that the linkable groups (of which a laundry list is given) is, in fact unimportant, so long as the groups were linkable.

The Examiner has proffered no *prima facie* evidence that any trihydroxy silane terminated material will act equally well. Absent such evidence, the prior art could at most provide only "obvious to try" for the presently claimed material, which are just two materials among very many materials that one might try. It is well established that "obvious to try is not enough to establish a *prima facie* case of obviousness. ND

In *In re O'Farrell*, 859 F.2d 1673 (Fed. Cir. 1988), the Court stated: "The Dean statement is of the type that gives only general guidance and is not at all specific as to the particular form of the claimed invention and how to achieve it. Such a suggestion may make an approach 'obvious to try' but it does not make the invention obvious." [see MPEP §2145, X(b)] Applicants submit that the facts of the present application are similar to those outlined in the MPEP for which "obvious to try" is a proper description of the Examiner's argument for rejection.

Applicants submit that a large number of possible chemical compounds are within the scope of the listed combinations of linkable groups. Even the use of a particular combination that is within the scope of the statement in the reference could reasonably be considered to be

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patentable. To exclude from patentability compounds that are not even listed seems to be unwarranted.

**Argument D - Applicable to claim 28**

Claim 28 adds the limitation that the underlayer is free of particulate matter. Applicants submit that Lever does not provide a *prima facie* case of obviousness for this feature.

The expressed desire of the Lever publication is to provide a surface that is suitable for both printing and writing. As indicated in the first line of the abstract, the film is suitable for drafting. In describing the prior art at page 2, lines 2-11, Lever makes clear that the deficiency of the prior art is that good writing and printing capabilities appear to be contradictory. At page 3, lines 22-32, the way to achieve the drafting capability is to provide a roughened surface, by adding particulate matter to the (under) lacquer layer.

Failure to add such material, while indicated as being preferable, would negate the basic objective of the invention, namely to provide a writable and printable surface.

Applicants note that the examples include substantial amounts of particulate materials in the lacquer layer.

The Examiner has indicated that the addition or deletion of the particulate additives is a obvious decision, based on the use of the substrate, in an attempt to shift the burden to the applicants. However, when the suggestion of the Examiner is to provide a change that goes against the underlying reason purpose of the invention (see MPEP §2143.01, penultimate section) there is no *prima facie* case of obviousness.

**Argument E - Applicable to claims 23 and 24**

Claims 23 and 24 provide that the underlayer has a weight of between 0.1 and 1 grams per square meter (for claim 23) and 0.3 and 0.5 grams per square meter (for claim 24). A weight corresponding to 1 gram per square meter corresponds approximately to a 1 micrometer. Thus, the Examiner is incorrect in his indication that the thicknesses claimed are within the range taught by the prior art. Actually, the thicknesses are half or one-quarter of the absolute *minimum* thicknesses defined in Lever and less than 1/3 or 1/6 of the preferred minimum thickness.

The board is referred to MPEP §2131.03 for a more proper application of the burden when a particular range is defined in a claim. As clearly indicated, only when the prior art value is within or bordering the claimed range is a rejection justified.

Applicants further note that the thickness has significance that is obvious on its face.

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Firstly, any coating will change the color (or transparency) of the coated as compared to the uncoated substrate. This change is minimized by using thinner coatings.

Secondly, the color of many polymer materials changes with time and with exposure to UV. Having as thin a coating as possible is generally desirable, for stability of the results.

And thirdly, coating materials cost money. Having a thin coating costs less than having a thick one.

Thus, when a minimum coating thickness is defined in a publication, this is a direct teaching that it is undesirable, for some unspecified reason, to make the coating thinner. Lever should thus be considered to teach away from the invention of claim 28, which claims a range of coating thicknesses much lower than even the minimum, not preferred, thickness of Lever.

Applicants submit that the Examiner's rejection may be based on the statement made at lines 6-9 of page 8 of the final rejection, in which case the Examiner indicates that the claimed range is within or overlaps the range in Lever. However, since this is incorrect for the underlayer, (see MPEP §2144.05, which indicates that criticality is necessary only when the ranges overlap or when the prior art is within the claimed range), applicants submit that the guidelines of MPEP §2131.03 apply and that the Examiner has not established a *prima facie* case of obviousness.

### **Argument F - Applicable to claim 32**

Claim 32 is a claim to a substrate and is based on the methods of withdrawn method claims 30 or 45. While the Examiner has rejected claim 32 as being unpatentable under 35 U.S.C. §112 (several rejections) and anticipated under 35 U.S.C. §102(b), the arguments raised in all of these rejections is based on the inclusion of the term "reaction products of amino propyl silane" in the claims. However, this term is not present in either of claims 30 or 45. Thus, the rejection of claim 32 is moot, after the admission of the amendment after final.



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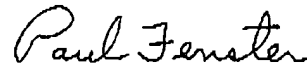
**(9) Conclusion**

None of the claims are anticipated and all of the claims are patentable in view of the prior art cited.

In view of the above arguments, applicants respectfully request that the Board reverse the ruling of the examiner and allow all the claims.

Attached are an Appendix, claims under appeal. Since claims 30 and 45 are necessary for the understanding of claim 32, which is under appeal, these claims are also included.

Respectfully submitted,  
Y. ALMOG, et al.



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September 11, 2003  
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**Appendix - Claims under Appeal**

1. A substrate suitable for printing a toner image thereon, comprising:  
a sheet of plastic;  
an underlayer coating, on the sheet of plastic, comprising a first polymer material selected from the group consisting of amine terminated polyamide, amino propyl triethoxy silane, and reaction products of amino propyl triethoxy silane; and  
an overcoating, directly on the underlayer, comprising a second polymer material and having an outer surface to which a toner image can be fused and fixed.
2. A substrate according to claim 1 or claim 42 wherein the overlayer is free of particulate matter.
3. A substrate according to claim 1 or claim 42 wherein the overlayer is wax and pigment free.
7. A substrate according to claim 1 or claim 42 wherein the sheet of plastic is polyethylene.
8. A substrate according to claim 1 or claim 42 wherein the sheet of plastic is vinyl.
9. A substrate according to claim 1 or claim 42 wherein the sheet of plastic is polycarbonate.
10. A substrate according to claim 1 or claim 42 wherein the sheet of plastic is polyethylene terephthalate (PET).
11. A substrate according to claim 1 or claim 42 wherein the sheet of plastic is BOPP (biaxially oriented polypropylene film).
12. A substrate according to claim 1 or claim 42 wherein the overlayer comprises styrene butadiene copolymer.

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14. A substrate according to claim 1 or claim 42 wherein the overlayer comprises ethylene acrylic acid copolymer.
15. A substrate according to claim 14 wherein the ethylene acrylic acid copolymer has an acrylic acid comonomer percentage weight of less than 18%.
16. A substrate according to claim 14 wherein the ethylene acrylic acid copolymer has an acrylic acid comonomer percentage weight of less than 16%.
17. A substrate according to claim 14 wherein the ethylene acrylic acid copolymer has an acrylic acid comonomer percentage weight of more than 8%.
18. A substrate according to claim 14 wherein the ethylene acrylic acid copolymer has an acrylic acid comonomer percentage weight of more than 12%.
19. A substrate according to claim 1 or claim 42 wherein the overlayer comprises polyvinyl pyridine.
20. A substrate according to claim 1 or claim 42 wherein the underlayer comprises amine terminated polyamide.
22. A substrate according to claim 1 or claim 42 wherein the underlayer comprises amino propyl triethoxy silane or reaction products of amino propyl triethoxy silane.
23. A substrate according to claim 1 or claim 42 wherein the underlayer has a weight of between 0.1 and 1 grams per square meter.
24. A substrate according to claim 1 or claim 42 wherein the underlayer has a weight of between about 0.3 and 0.5 grams per square meter.

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25. A substrate according to claim 1 wherein the overlayer has a weight of between 0.1 and 10 grams per square meter.

26. A substrate according to claim 1 or claim 42 wherein the overlayer has a weight of between 0.2 and 2 grams per square meter.

27. A substrate according to claim 26 wherein the overlayer has a weight of between about 0.25 and about 0.35 grams per square meter.

28. A substrate according to claim 1 or claim 42 wherein the underlayer is free of particulate matter.

29. A substrate according to claim 1 or claim 42 consisting of only two coating layers.

30. (WITHDRAWN) A method of producing a coated substrate to which a toner image can be adhered comprising:

coating a sheet of plastic with a first polymer material as an underlayer, the underlayer comprising a polymer material chosen from the group consisting of amine terminated polyamide, and amino propyl triethoxy silane; and

directly overcoating the underlayer with a second polymer material to form an overlayer coating on the underlayer, the overlayer having an outer surface to which a toner image can be adhered and fixed.

32. A substrate produced according to the method of claim 30 or claim 45.

42. A substrate suitable for printing a toner image thereon, comprising:  
a sheet of plastic;

an underlayer coating, on the sheet of plastic, comprising a first polymer material comprising a polymer chosen from the group consisting of amine terminated polyamide,

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amino propyl triethoxy silane and reaction products of amino propyl triethoxy silane;  
and

an overlayer coating, directly on the underlayer, comprising a second polymer material and having an outer surface to which a toner image can be fused and fixed,  
wherein the overlayer coating has a thickness of between 0.1 and 10 microns.

45. (WITHDRAWN) A method of producing a coated substrate which a toner image can be adhered comprising:

coating a sheet of plastic with a first polymer material as an underlayer, the underlayer comprising a polymer chosen from the group consisting of amine terminated polyamide and amino propyl triethoxy silane; and

directly overcoating the underlayer with a second polymer material to form an overlayer coating on the underlayer, the overlayer having an outer surface to which a toner image can be adhered and fixed,

wherein the overcoating has a dry thickness of between 0.1 and 10 microns.